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ABSTRACT

This paper explores the relationship between: (1) premature withdrawal from high school, (2) entrance to college, and (3) several attitudinal, socioeconomic and demographic measures taken from a national probability sample of 5,225 young men interviewed in 1966 and again in 1967. Being over-age in grade in 1966 and at least 17 in 1967 strongly increased the likelihood of dropping out of high school and this relationship affected blacks much more than whites. Among youth not over-age, low I.Q. and living in the West (whites) or South (blacks) increased the probability of premature withdrawal from school. A combination of relatively low educational aspirations, low family income, and low expenditures per pupil also increased the probability of dropping out of school. While blacks constituted less than one-third of the sample, they were a majority in these disadvantaged categories. The educational expectations of seniors were strongly predictive of entrance to college. Expectations, in turn, were closely related to high school curriculum and mother's educational attainment. Despite low family incomes and relatively little education of many of their mothers youths with high I.Q.'s in these circumstances were more successful than average in moving into college. (Author)

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DETERMINANTS OF EDUCATIONAL ATTAINMENT AND RETENTION IN SCHOOL

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DETERMINANTS OF EDUCATIONAL ATTAINMENT AND RETENTION IN SCHOOL

John R. Shea and Roger A. Wilkens*

ABSTRACT (REVISED)

This paper explores relationships between (a) premature withdrawal from high school, (b) entrance to college, and several attitudinal, socioeconomic, and demographic measures taken from a national probability sample of 5,225 young men interviewed in 1966 and again in 1967. Being over-age in grade in 1966 and at least 17 years of age in 1967 strongly increased the likelihood of dropping out of high school. This relationship affected blacks much more than whites. Among youth not over-age, low IQ and living in the West (whites) or South (blacks) increased the probability of premature withdrawal from school. A combination of relatively low educational aspirations, low family income, and low expenditures per pupil in average daily attendance also increased the probability of dropping out of school. While blacks constituted less than one-third of the sample, they nevertheless were a majority in these disadvantaged categories. The educational expectations of seniors in 1966 were strongly predictive of entrance to college. Expectations, in turn, were closely related to high school curriculum; and those seniors with low expectations and living in single-parent or in large families infrequently went on to college. Among youngsters expecting four or more years of college, mother's educational attainment made a considerable difference in college attendance. Specifically, the sons of mothers with at least twelve years of education were much more likely to enter college than the offspring of mothers with less education. On the other hand, despite low family incomes and relatively little education of many of their mothers, youth with high IQ's in these circumstances were more successful than average in moving on to college.

Completion of high school and successful transition to college are topics in which there is considerable research and policy interest. High levels of

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* The authors are, respectively, Research Associate and Assistant Professor of Educational Development, and Graduate Research Assistant, Center for Human Resource Research, The Ohio State University. This paper is based on data collected by the U. S. Bureau of the Census as part of the National Longitudinal Surveys, a project sponsored by the Manpower Administration, U. S. Department of Labor, under the authority of the Manpower Development and Training Act. As is customary, it should be noted that the interpretations and viewpoints in this paper do not necessarily represent the position or policy of the Department of Labor.

youth unemployment and persistent inequalities in educational opportunity lie at the root of this concern. At the same time, there is continued debate concerning the probable consequences (and, effectiveness) of various policy options that might be used to redress inequities or to boost the overall retention rate within the nation's educational system. Within this context, several policy instruments are available to the schools as well as to the larger society. They include counseling and guidance activities, changes in curriculum, modification of recruitment and selection procedures, scholarship and loan arrangements, family planning programs, changes in the tax structure, and welfare reform.

PURPOSE AND DATA SOURCE

In this paper, we examine the school enrollment status in October-November 1966 and again one year later of a subset of a national probability sample of the civilian noninstitutional population of young men who were 14 to 24 years of age in April 1966. Our attention is focused on boys who were enrolled in school below the college level when initially interviewed. We seek to identify the important correlates of (1) retention in (or, successful completion of) high school, and (2) transition from the twelfth grade to college.

We are fortunate in having data on a large number of both blacks and whites.[1] Blacks were over-represented in our sample by a three-to-one ratio in order to permit a reasonably confident analysis of differences in their education and labor market experiences.[2] Of the initial cohort of 5,225 young men, 3,734 were white and 1,491 were Negroes or members of other races.

All but 8.4 percent of the cohort were reinterviewed in the fall of 1967--that is, at the time of the second of six annual interviews. It was not possible to locate 1.8 percent of the youths, and an additional 1.3 percent refused to be reinterviewed, while the bulk of nonrespondents (5.3 percent) was excluded temporarily from the sample in accordance with the study design, which called for excluding men while in the military service. Subsequent to the second wave of interviews, a special school survey was conducted by the Census Bureau to supplement information derived from personal interviews. The school questionnaire, which asked for information on the mental ability of the young men and on selected characteristics of the schools themselves, was sent to the most recent high school attended by each respondent who had ever attended high school. Scores from various tests (intelligence, aptitude, achievement, etc.) were pooled,[3] and information on school characteristics was factor analyzed and used in the construction of an index of school quality.[4]

In the remainder of this paper we compare the school enrollment status in 1966 and 1967 of the young men who were enrolled in high school or elementary school when initially interviewed, and we describe some of the important correlates (1) of dropping out of school, and (2) of moving from the senior year of high school to college. A brief summary and some concluding remarks complete the paper.

SCHOOL ENROLLMENT STATUS, 1966-67: AN OVERVIEW

Properly weighted, the original (1966) sample was selected so as to be representative of the noninstitutional civilian population of male youth

14 to 24 years of age. Estimates of enrollment rates in 1966 by single year of age are presented for blacks and nonblacks, respectively, in columns 4 and 8 of Table 1. These enrollment rates of blacks and nonblacks (unadjusted for sample attrition) are not substantially different at the younger ages, but they differ substantially among those 18 and older. Consistent with this observation, there is a much larger difference between the two color groups when it comes to movement to college compared to retention in (or, completion of) high school. Regardless of color, however, age is negatively associated with the probability of staying in school. In 1966, the gap in the enrollment rate was especially great between boys 16 and 17 years of age. For this reason and because school laws generally compel attendance until a youngster's sixteenth birthday, age was included as a variable in the statistical analysis.

In order to avoid possible misinterpretation of the estimates in Table 1, it should be remembered that the enrollment rates for 1967 refer only to those who were interviewed in <u>both</u> years, while the rates for 1966 apply to <u>all</u> respondents in the initial survey. Especially among 17 to 19 year olds in 1966, attrition from the sample was quite high. The bulk of this loss, however, was a consequence of entry into the military services, which effectively eliminated such men, at least temporarily, from the sample. As might be expected, attrition due to "failure to locate" was also higher-than-average among those in their late teens. And, since youngsters who move geographically are probably more likely to leave school completely than those who stay in one place, we suspect that even if we restrict our attention to the <u>civilian</u> population, the 1967 enrollment rates shown in Table 1 have a slight upward bias.

Table 1 School Enrollment Status, 1966 and 1967, and Attrition from the Sample, 1966-1967, by Age and Color: Young Men 14 to 24 Years of Age in 1966

Age in 1966	BLACKS				NONBLACKS				Ratio: Black to Nonblack Enrollment Rates	
	Total number 1966 (thousands)	Sample attrition rate, 1966-1967 (percent)	School enrollment rate (percent)		Total number 1966 (thousands)	Sample attrition rate, 1966-1967 (percent)	School enrollment rate (percent)			
			1966[a]	1967[b]			1966[a]	1967[b]	1966[a] Col.(4)÷ Col.(8)	1967[b] Col.(5)÷ Col.(9)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
14 years	218	1.4	97.7	94.8	1,653	1.9	98.8	96.5	.99	.98
15 years	245	5.7	92.7	85.6	1,581	2.2	97.2	93.3	.95	.92
16 years	272	7.4	86.0	66.3	1,623	8.6	93.5	77.8	.92	.85
17 years	207	11.6	64.7	48.9	1,481	11.3	74.1	58.8	.87	.83
18 years	143	20.3	41.2	28.0	1,357	18.3	61.5	55.2	.67	.51
19 years	156	17.9	27.6	20.9	1,397	12.2	52.3	47.2	.53	.44
20 years	129	10.1	14.0	9.9	996	9.4	40.6	32.4	.34	.31
21 years	159	8.8	14.5	10.9	1,018	10.1	34.3	27.5	.42	.40
22 years	106	12.3	3.8	4.6	1,010	2.9	24.0	19.6	.16	.23
23 years	124	9.7	5.6	5.6	1,059	8.0	21.5	14.4	.26	.39
24 years	159	13.8	11.3	8.5	993	5.9	17.2	14.3	.66	.59
Total or average	1,919	10.0	51.0	44.4	14,163	8.2	61.7	54.9	.83	.81

(a) Based on those responding in 1966, whether or not they responded in following year.
(b) Based on those responding in both years--or, number of sample cases in 1966 less sample attrition.

METHOD OF ANALYSIS

The statistical analysis in this paper is inductive and exploratory. We have chosen explanatory variables from several disciplinary frameworks. We have included many of those which the literature in economics, sociology, social psychology, and education identify as seemingly important in distinguishing dropouts from those who remain in high school, or entrants to college from those who leave school after their senior year.[5] The Appendix contains a complete list of the variables used in the analysis. In addition to mental ability (or, IQ), race, educational attainment of mother and father, age, and family income, we have included several attitudinal measures (e.g., educational aspirations and expectations), indicators of school quality, and other demographic and family background measures.

We have used a computer algorithm known as AID (Automatic Interaction Detection Program) to identify those explanatory variables which possess the strongest association with the probability of, as appropriate, (1) continuing (or completing) high school, or (2) moving from high school to college. The algorithm begins by computing for the full sample the mean and sum of squares of the dependent variable ("dummy" 1,0 variables in this case). It then selects from among the set of explanatory variables the particular binary partition of one of the variables which splits the sample into two groups and minimizes the within sums of squares between groups. Each of the resulting groups is then treated like the initial group and the process continues through a series of binary splits.[6] This succession of dichotomies forms a tree-like structure of relationships in which progressively more homogeneous subgroups are isolated. The structure describes in sequence the factors which are most

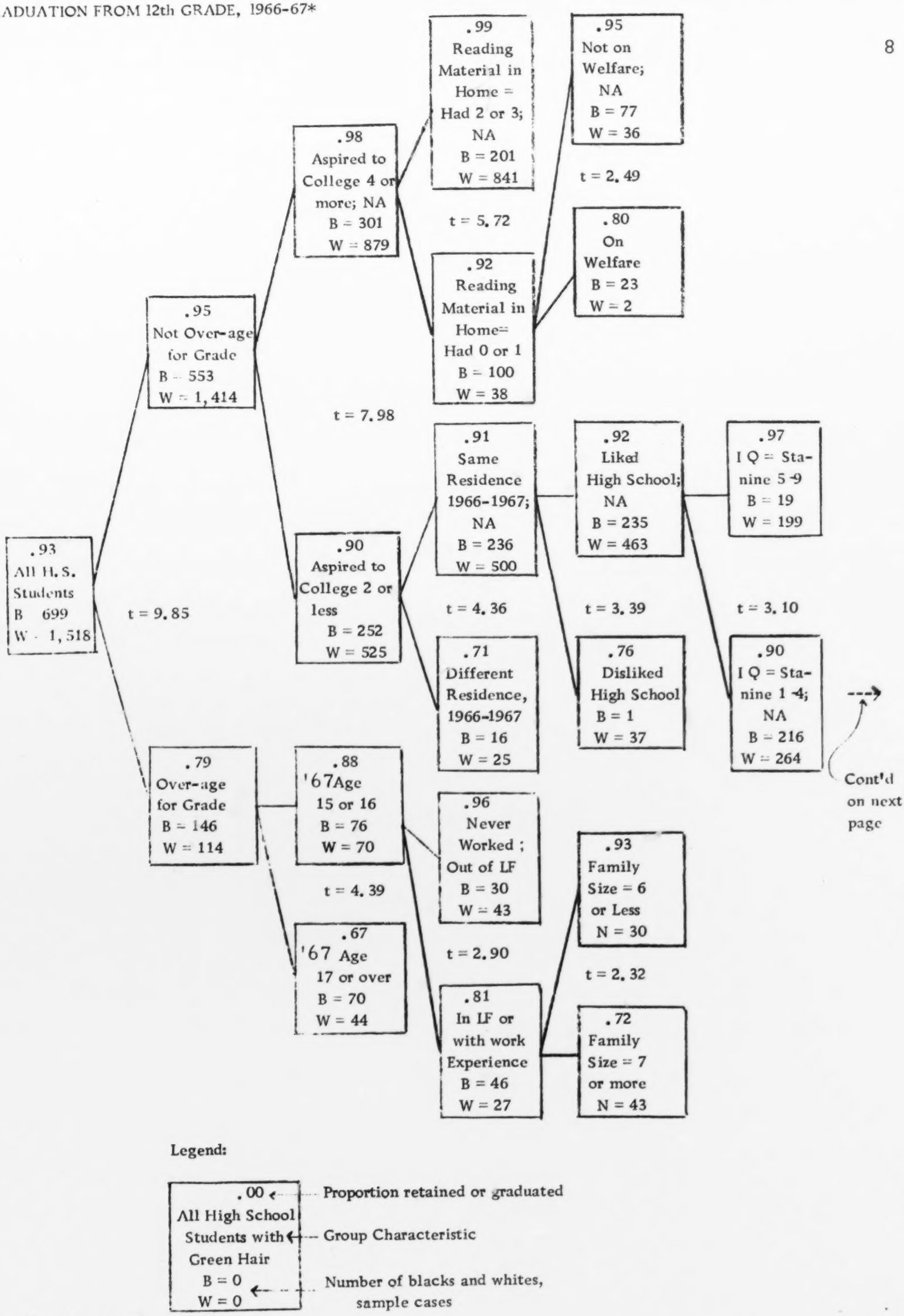
salient in identifying subgroups. However, typically a variable chosen by the algorithm is correlated with several other factors, the effects of which are "masked" by the more salient variable. Thus, some factors which one might expect to have considerable explanatory power often do not appear explicitly in the AID "tree," but rather are reflected in the appearance of their correlates. We shall refer to some of these hidden, underlying intercorrelations in the next two sections of the paper.

CORRELATES OF CHANGE IN SCHOOL ENROLLMENT, 1966-67

Withdrawal from High School

Figure 1 provides a graphical summary of the results of the AID algorithm as applied to the sample of black and white youngsters enrolled in high school or below when first interviewed in 1966. Of the 2,217 young men, 93 percent either graduated or were still enrolled in high school as of October 1967. In other words, 7 percent dropped out or were pushed out. The overall structure of the "tree" presented in Figure 1 is comprised of three main branches, each of which, for simplicity, may be thought of as a major flow of high school students through (or, out of) the American educational system.[7] This tripartition is the product of an initial split in the sample which isolated those who were over-age in grade in 1966, and a further subdivision of the group who were not over-age into those aspiring to four or more years of college and those wanting two years of college or less (e.g., high school graduation only). Reflected in these two splits are the myriad of factors which lead to retardation in grade[8] and which condition the evolution of (presumably, increasingly realistic) educational aspirations and expectations.

FIGURE 1 RETENTION IN HIGH SCHOOL OR GRADUATION FROM 12th GRADE, 1966-67*

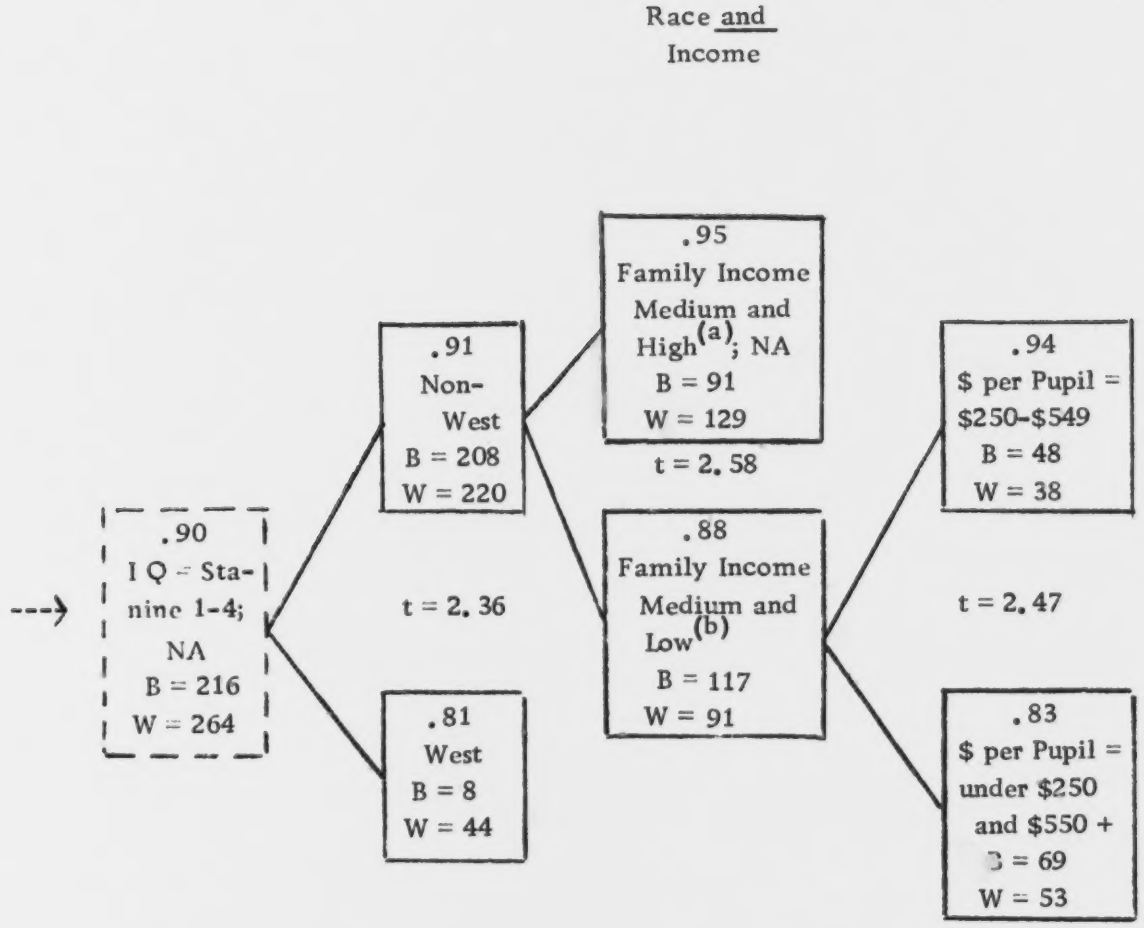


Legend:

.00 ← Proportion retained or graduated
All High School Students with ← Group Characteristic
Green Hair
B = 0
W = 0 ← Number of blacks and whites, sample cases

NA - Not Ascertained
* (see next page)

FIGURE 1 (Continued)



(a) Blacks: $3,000 - 5,999, $10,000 or more, NA; Whites: $6,000 or more, NA
(b) Blacks: Less than $3,000, $6,000 - $9,000; Whites: Less than $6,000

*The sample of high school students is restricted to those interviewed in both years. The fourteen terminal groups "explain" about 14 percent of the sum of squares in the total sample. Variables used in the analysis are listed in the appendix. Only those shown in the diagram above were able to reduce significantly the unexplained sum of squares in the original group.

Our data show that those over-age in grade were four times as likely to withdraw prematurely from school as those who were not over-age. Moreover, black students in the sample were nearly three times as likely as white to be over-age (21 versus 8 percent), and based on data not shown in the diagram, the chances of a student being both over-age and enrolled in a college preparatory curriculum were less than two in a hundred. Clearly, embedded in the structure of relationships described in Figure 1 are a multitude of institutional and socioeconomic factors which transcend the significance of the particular variables which have ostensibly determined the partitions.

Turning our attention to the branches near the top of Figure 1, which refer exclusively to those <u>not</u> over-age in grade in 1966, it is clear that the "mainstream" of male youth successfully moving through high school are those who said they would like at least four years of college and who grew up in homes with rich educational environments as measured by access to several sources of reading material at age 14--a library card, newspapers, and magazines. Indeed, close to half of the sample (1,042 of 2,217) are in this "mainstream" category; altogether 99 percent stayed in school or graduated. Of those with high educational aspirations but little access to reading material at home, 92 percent stayed in school. This group is comprised of 100 blacks and 38 whites. In other words, a black youngster in our sample who wanted four or more years of college was eight times more likely than his white counterpart to fall into this category of little access to reading material at home. Furthermore, based on tabulations not shown, 72 percent of these 138 students lived in the South and only 27 percent were in college preparatory programs. On the other hand, 57 percent of the "mainstream" group were enrolled in the

academic track. Within the group of 138, being on welfare was negatively related to retention in school. Of course, receipt of welfare is serving in this case as a proxy for low family income and, in most cases, living in a single-parent family. The 25 youths in "welfare families"--mainly southern blacks--left school four times as frequently as those who were not receiving welfare.

In many ways the most interesting group of young men are those who were not over-age in 1966 but held relatively low educational aspirations (2 years of college or less--most often completion of high school). One-tenth of these 777 boys withdrew from school. Those who changed residence between 1966 and 1967;[9] those who did not move but disliked school somewhat; and those who liked school but possessed low IQ's (or, for whom mental ability was not reported) tended to drop out more frequently than their counterparts. Continuing along this branch from the split on IQ, it can be seen that Westerners with low IQ's and Nonwesterners (based on tabulations not shown, mostly youth in the South) with low IQ's, low family incomes, and going to schools where expenditures per pupil in average daily attendance were also low had a rather high probability of dropping out of high school. While we cannot be sure at this time, we suspect that the white (or, nonblack) Westerners with the .19 chance of having withdrawn from school are predominantly Mexican-Americans and American Indians. The structure of this branch of the "tree" reveals a stable central core off of which are spun different peripheral groups with their particular characteristics or disadvantages. The core has a steady dropout rate of about 10 percent. The major differentiations of the core group are represented by the splits on IQ and race-income. We will return to a discussion of some of the factors underlying the relationships manifest in this branch in the final section of the paper.

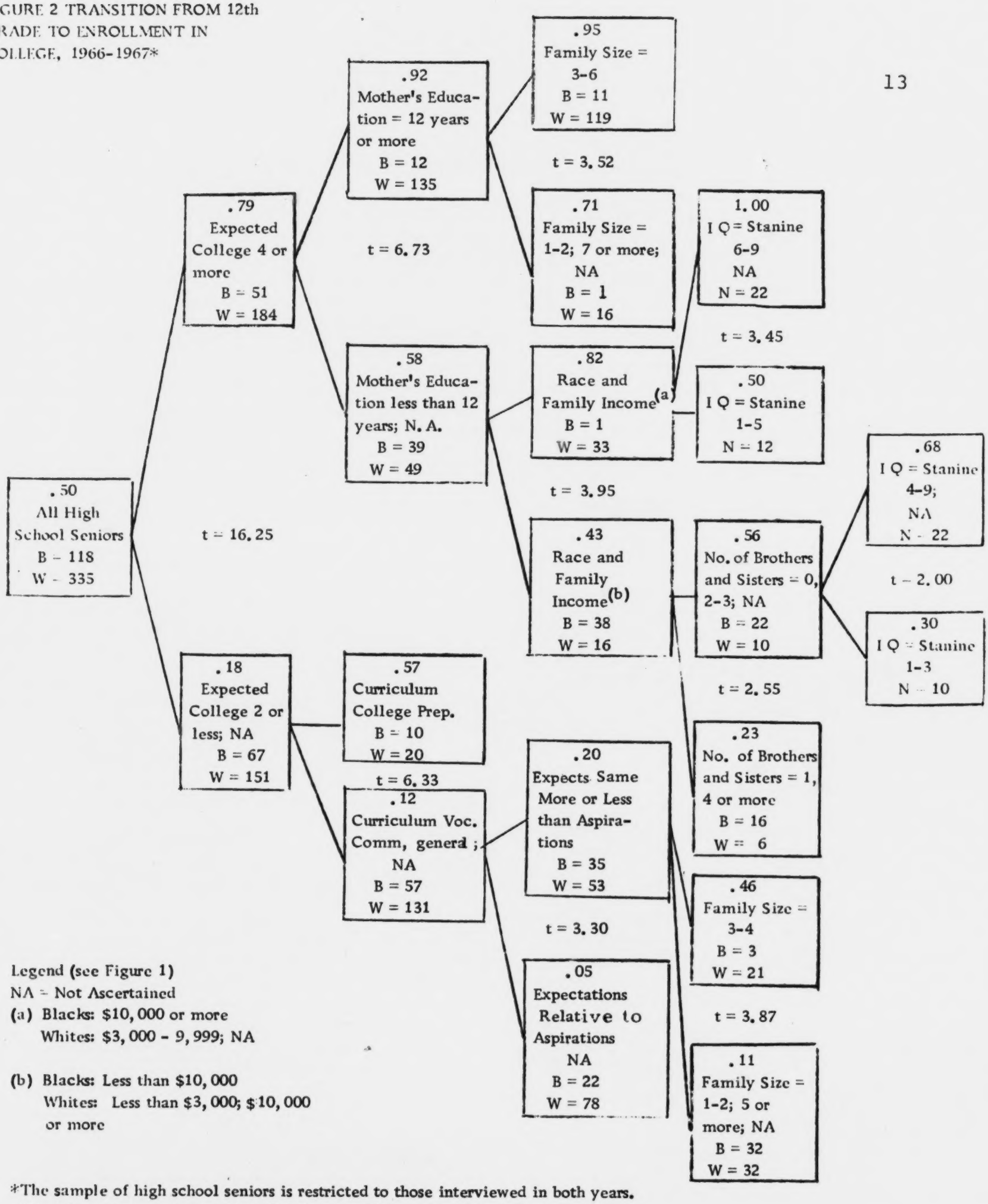
Turning finally to the bottom stream in Figure 1, we see that those over-age in grade in 1966 had a relatively high probability of withdrawal from school: 21 percent. We have already noted that 99 percent of this predominantly black group of over-aged students had been guided into programs other than the college preparatory one. As these students pass the legal limit for compulsory school attendance, they tend to leave school in increasing proportions. Only two-thirds of the youngsters 17 or older in 1967 stayed in school or graduated. Among their younger comrades (age 15 or 16 in 1967) participation in the world of work--as of the first survey--is the clearest indicator of the over-aged student's upcoming departure from school. Of the youngsters in this group who had entered the labor market, economic pressures of a large family seem to be the factor encouraging them to leave school.

Transition to College

The AID algorithm was run on twelfth graders in 1966 to see what factors distinguish those who went on to college from those who did not. The results are shown in Figure 2. Altogether, half of the 453 seniors responding in both years went on to college. While highly correlated with educational aspirations, educational expectations possess the highest degree of explanatory power, and the largest split is between those who expected at least four years of college and those who did not--roughly equal groups in terms of the number of sample cases.

Looking first at the youth with relatively low expectations or who failed to report their expectations (bottom branch of the diagram), those not in a college preparatory program terminated their education in disproportionately large numbers. We suspect that the large number of seniors in vocational,

FIGURE 2 TRANSITION FROM 12th GRADE TO ENROLLMENT IN COLLEGE, 1966-1967*



Legend (see Figure 1)
NA = Not Ascertained
(a) Blacks: $10,000 or more
Whites: $3,000 - 9,999; NA

(b) Blacks: Less than $10,000
Whites: Less than $3,000; $10,000 or more

*The sample of high school seniors is restricted to those interviewed in both years. The eleven terminal groups "explain" about 57 percent of the sum of squares in the total sample. Variables used in the analysis are listed in the appendix. Only those shown in the diagram above were able to reduce significantly the unexplained sum of squares in the original group.

commercial, or general tracks had in one way or another developed goals and expectations consistent with the nature and objectives of their educational programs, although this is a chicken-and-egg kind of issue.

Among twelfth grade boys who expected to get at least four years of college, the first split is on mothers' educational attainment. Specifically, 92 percent of the respondents whose mothers had 12 or more years of schooling entered college, while the same was the case for only 58 percent of those whose mothers had less than 12 years.[10] Within the former category (mothers with 12 or more years of school), youngsters living in single-parent or in large families had a significantly lower probability of going on to college than those in medium size families.

It is worth noting that this split on mother's education hides important divisions on race and high school curriculum that are not shown in the Figure. Blacks were nearly three times as likely as whites to have poorly educated mothers. Blacks from this large group entered college only half as often as their white counterparts. Likewise, three-fourths of those in both color groups (i.e., the total) who had high educational expectations and had taken a college preparatory program also had highly educated mothers. However, the remaining one-fourth (or, 45 students) who had prepared for college but had poorly educated mothers still continued to college twice as often as their companions who had studied a different curriculum. The importance of curriculum is also reflected in a relatively high probability of continuation to college associated with a college preparatory program among those with low educational expectations (see bottom branch).

Although the number of sample cases is small, youngsters with high expectations but with mothers possessing less than 12 years of education constitute a very interesting group in terms of movement to college. Those in both color groups with low family income had less than a "50-50" chance of going to college, although it is heartening indeed that over two-thirds of these youngsters with medium-to-high IQ's went to college.[11] As anticipated, those with low IQ's or those living in large families had a relatively slim chance of going to college--30 and 23 percent, respectively.

While many young men had dropped out of school before their senior year in high school, in some ways the data in Figure 2 are quite encouraging. One of the most intriguing questions must be the circumstances and mechanisms by which the educational aspirations and expectations of youngsters evolve over time. Despite low income, and less than 12 years of education on the part of at least one parent, some youngsters nevertheless made it to college. To what extent this stems from forces and pressures within the family, personality characteristics, or talent search and student aid programs of universities and other organizations, we are unable to determine at this time.

SUMMARY AND CONCLUSIONS

Using data derived from a national probability sample of 5,225 young men (3,734 whites and 1,491 Negroes and others) interviewed in 1966 and again in 1967, we have explored the relationships between several attitudinal, socio-economic and demographic variables, and (a) premature withdrawal from high school, and (b) entrance to college. Being over-age for grade in the fall of 1966 increased the likelihood of dropping out of school, especially among those over 16 years of age in 1967. Moreover, black youth were a clear majority of

those over-age (146 compared to 114 sample cases), although they constituted less than one-third of our total sample of students enrolled in the twelfth grade or below in 1966.

Black youngsters were also a majority (or close to a majority) in several other categories where the dropout rate was especially high. Among youngsters not over-age in grade, groups with high dropout rates included: youth who aspired to two years of college or less, and who had low IQ's, low family income and attended schools with low expenditures per pupil; and, a small number of youth with high aspirations, who lived in families receiving welfare, and who had little or no access in the home to reading material (newspapers, magazines, library card). Thus, it appears that the serious disadvantages suffered by blacks are deeply rooted and are largely associated with differences in family structure and size, economic conditions, the quality of schooling, and the incidence of retardation in grade.

Of the variables examined, educational expectations emerged as the strongest predictor of entrance by high school seniors to college in 1967. Whatever the direction of causation, relatively low expectations, in turn, were related closely to curriculum--specifically to being in vocational, commercial, or general rather than college preparatory programs. Within the nonacademic track, those tending not to respond to our questions on educational aspirations or expectations and those in single-parent or in large families rarely went on to college.[12]

Nearly four of every five seniors who expected four or more years of college in 1966 actually were in college when interviewed a year later, in

contrast to 18 percent of those with lesser expectations. Among the group with high expectations, the best discriminator between those who actually went on to college and those who did not was the highest year of school completed by the respondent's mother. While 92 percent of the youngsters with high expectations whose mothers had 12 or more years of education went to college, the same was true for only 58 percent of those with mothers who had less schooling. Within the latter group (mother with little education), low income, large family size, and low IQ were associated with a reduced likelihood of entering college.

If we assume, for a moment, that more (or, more equal) education for youngsters in school is a desirable societal objective, the relationships in this paper seem to imply that public policy in several areas is relevant. The importance in the analysis of individual expectations and curriculum suggest the need for careful re-examination of the internal operation of school systems and of the many financial and other barriers to higher education. It is clear that the expectations and aspirations of black youth are more frequently frustrated than in the case of their white counterparts. The expectations of black youngsters in school are only slightly lower than those of white, but the gap in successful transition to college is very large indeed. Especially if family income is low, youngsters living in small, single-parent families or who have many siblings are at a distinct disadvantage, and blacks often find themselves in such circumstances. This suggests, then, that in addition to (1) modifications in gatekeeping practices, (2) reallocation of resources toward the South, and (3) meaningful reform of the welfare system, efforts to enhance the stability of family life may pay high dividends in breaking the cycle of poverty--an important element of which is low educational attainment.

FOOTNOTES

1 At the expense of some accuracy, we are using the terms "white" or "nonblack" throughout this paper to refer to Caucasians and such groups as American Indians, Chinese, and Japanese. "Black" refers exclusively to Negroes.

2 All nonblack nonwhites were over-represented in this manner. For a more thorough description of the sample, see Herbert S. Parnes, Robert C. Miljus, Ruth S. Spitz and Associates, Career Thresholds: A Longitudinal Study of the Educational and Labor Market Experience of Male Youth 14-24 Years of Age, Vol. I (U. S. Department of Labor, Manpower Administration Research Monograph 16; Washington, D. C.: U. S. Government Printing Office, 1969); and Frederick A. Zeller, John R. Shea, Andrew I. Kohen, and Jack A. Meyer, Career Thresholds, Vol II (USDOL, MA Research Monograph forthcoming; Washington, D.C.: USGPO, 1971).

3 While pooling of scores from many different tests is not a common practice, considerable effort went into testing for the validity of the procedures finally adopted. Of course, there was considerable nonresponse on IQ. Some youngsters did not sign releases, and a disproportionately large number of nonresponses came from Southern schools in rural areas.

4 This index is an ordinal variable constructed as follows. Schools reporting information were ranked in descending order in terms of (1) library books per pupil; (2) price-adjusted, district-wide annual salary of an inexperienced teacher with a bachelor's degree; and (3) full-time-equivalent counselors per 100 pupils. They were ranked in ascending order on (4) pupils per full-time teacher. The ranks were normalized by subtracting the median rank and dividing by the standard deviation of the rankings, and the normalized ranks (each with a weight of one) were then added to yield a composite rank. A review of empirical work on school quality and a principal components factor analysis failed to uncover any more justifiable weighting procedure. The composite scores were then condensed by assuming an approximately uniform (as opposed to, say, normal) distribution on an integer scale from 1 to 100. A normalized distribution of scores is now available, but was not used in this paper.

5 For example, Lucius F. Cervantes, The Dropout: Causes and Cures (Ann Arbor: University of Michigan Press, 1965); Robert A. Dentler and Mary Ellen Warshauer, Big City Dropouts and Illiterates (New York: Praeger, 1968); Beverly Duncan, Family Factors and School Dropout 1920-1960 (Ann Arbor: University of Michigan Press, 1965), and "Dropouts and the Unemployed," Journal of Political Economy (April 1965), pp. 121-34; S. M. Miller, et al., School Dropouts: A Commentary and Annotated Bibliography (Syracuse, N.Y.: Syracuse University Youth Development Center, 1964); S. O. Lichter, et al., The Dropouts (New York: Free Press of Glencoe, 1962); Daniel Schreiber, et al., Profile of the School Dropout (New York: Vintage Books, 1968); Charles B. Nam, Lewis Rhodes, and Robert E. Herriott, "School Retention by Race, Religion, and Socioeconomic Status," Journal of Human Resources (Spring 1968), pp. 171-90;

Footnote No. 4 cont'd

Thomas Shailer and Dean D. Knudsen, "The Relationship between Nonpromotion and the Dropout Problem," Theory into Practice (June 1965), pp. 90-94; and U. S. Department of Health, Education, and Welfare, Office of Education, Aspirations, Enrollments, and Resources: The Challenge to Higher Education in the Seventies (Washington, D. C.: USGPO, 1970), especially Chapter 2, "Aspirations and Demand for Post-Secondary Education in the mid-1960's."

6 John A. Sonquist and James N. Morgan, The Detection of Interaction Effects (Ann Arbor: Institute for Social Research, University of Michigan, 1964).

7 It should be remembered that here we are using unweighted sample cases emerging from a multi-stage probability sample in which blacks (and other nonwhites) are over-represented. Hence, the relationships discussed here reflect the circumstances and behavior of a disproportionately large number of black youth when compared to the national population.

8 At one level, age-grade retardation stems from delayed entry to school, repetition of grades, and extended absences from school. We do not know, at least at this time, to what extent these patterns are related to factors such as geography, the quality of schooling, health conditions and economic pressures. See the Appendix for a description of how this over-age variable was constructed.

9 The direction of causation is not at all clear in this case. Movement may rupture peer group relationships and increase the chances of leaving school completely. And, of course, a dropout may be inclined to move away from home.

10 A further examination of the data shows that the split on father's education would have manifested less disparity in the transition coefficients. Nevertheless, the two parental measures are highly intercorrelated, with $r > .5$. As a consequence, no split occurred on father's education.

11 Here and elsewhere, there are occasionally a sample case or two which diverge from the typical pattern. For instance, there are one or two white youths reporting family incomes of $10,000 or more who are in the group with a .43 transition coefficient. These small aberrations are to be expected and may, in some cases at least, reflect measurement error.

12 We are inclined to believe that young men with low educational aspiration and expectations frequently declined to answer such questions.

APPENDIX

LIST OF VARIABLES AND UNIVERSE RESTRICTIONS

A. DEPENDENT VARIABLES AND UNIVERSE RESTRICTIONS:

Y_1 = A continuation-in-school variable (1 = enrolled in elementary through HS4 in 1966, and enrolled in elementary through HS4 or graduated by 1967; 0 = otherwise)

Y_2 = A transition-to-college variable (1 = enrolled in HS4 in 1966, and completed HS4 and enrolled in 1967; 0 = otherwise)

B. EXPLANATORY VARIABLES:

Description and Code Categories	Used with Y_1	Used with Y_2
RESIDE = Residence, 1966 (1 = rural; 2 = nonurbanized area under 25,000; 3 = urban area 25,000 to 250,000; 4 = urban area over 250,000)	Yes	Yes
RACE = Race (1 = white and nonblack nonwhites; 2 = black)	Yes	Yes
FAMSZE = Family Size (in household), 1966 (1 = 1-2; 2 = 3-4; 3 = 5-6; 4 = 7-8; 5 = 9 or more)	Yes	Yes
GRDATT = Grade Attending, 1966 (elementary = 1,HS1 = 2; HS2 = 3; HS3 = 4, HS4 = 5)	Yes	No
OVRAGE = Overage in grade (1 = elementary and age > 14, or HS1 and age > 15; or HS2 and age > 16, or HS3 and age > 17 or HS4 and age > 18; 0 = otherwise	Yes	No
EDYRSD = Educational aspirations (1 = less than 12; 2 = 12; 3 = college 2; 4 = college 4; 5 = college 6 or more; 6 = NA(a))	Yes	No
EDYARC = Educational expectations (0 = 12 or less; 1 = college 2; 2 = college 4; 3 = college 6 or more; 4 = NA)	No	Yes
WLFPA* = Family receiving welfare, 1966 (1 = yes; 2 = no; 3 = NA)	Yes	Yes
RES14R = Family structure at age 14 (1 = father and mother; 2 = mother only; 3 = other-- no adult male; 4 = other--adult male present)	Yes	Yes

(a) NA means not ascertained.

		Used Y_1	with Y_2
CULEXT =	Access to reading material (newspaper, magazine, library card), age 14 (1 = had all three; 2 = lacked 1; 3 = lacked 2; 4 = lacked 3; 5 = NA	Yes	Yes
EMPSTA =	Labor force and employment status, 1966 (1 = employed; 2 = unemployed; 3 = never worked; 4 = other out of labor force; 5 = NA	Yes	Yes
HSREGC =	Region (Census Division) of most recent high school attended, 1966 (1 = West; 2 = South; 3 = North Central; 4 = Northeast; 5 = Outside U.S. and NA)	Yes	Yes
HSCURT =	Curriculum in high school (1 = vocational; 2 = commercial; 3 = college preparatory; 4 = general; 5 = NA)	Yes	Yes
HSXCHW =	Extracurricular activities, hours per week (0 = none 1 = 1-4; 2 = 5-9; 3 = 10 or more; 4 = NA)	Yes	No
HSCOXR =	Attitude toward high school, 1966 (1 = like it very much; 2 = like it fairly well; 3 = dislike it somewhat; 4 = dislike it very much; 5 = NA)	Yes	Yes
EDX-DS =	Relation of educational expectations to aspirations, 1966 (1 = expects same or more; 2 = expects less; 3 = NA)	Yes	Yes
WWKT12 =	Weeks worked by respondent in past 12 months, 1966 (0 = None; 1 = 1-13; 2 = 14-26; 3 = 27-52; 4 = NA)	Yes	Yes
KNWJDE =	Knowledge of world of work[(b)] (1 = low; 2 = medium; 3 = high; 4 = NA)	Yes	Yes
POC30D =	Occupational aspiration at age 30, Duncan index score (1 = 00-39; 2 = 40-59; 3 = 60-79; 4 = 80-99; 5 = Don't know and NA)	Yes	Yes
INCF12 =	Family income in past 12 months, 1966 (1 = under $3,000; 2 = $3,000-5,999; 3 = $6,000-9,999; 4 = $10,000 or more; 5 = NA)	Yes	Yes

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(b) A series of twenty-eight questions designed to measure the extent of the respondent's information about the labor market. Respondents were first asked to match job titles with job descriptions and, second, to indicate the amount of regular schooling needed for specific occupations; and, third, to choose from a pair of occupations the one in which average annual earnings are higher. For scoring procedures, see Parnes, et al., Career Thresholds, Vol. I, pp. 120-21n.

		Used with Y_1	Used with Y_2
OCFA14	= Occupation of father or head of household, age 14 (1 = white-collar; 2 = blue-collar; 3 = service; 4 = farm; 5 = NA)	Yes	Yes
EDFMGC	= Father's educational attainment (1 = doesn't know; 2 = 0-8 years; 3 = 9-11; 4 = 12; 5 = 13 or more; 6 = NA)	Yes	Yes
EDMMGC	= Mother's educational attainment (1 = doesn't know; 2 = 0-8 years; 3 = 9-11; 4 = 12; 5 = 13 or more; 6 = NA)	Yes	Yes
AGE	= Age, 1967 (1 = 15; 2 = 16; 3 = 17; 4 = 18; 5 = 19; 6 = 20-25)	Yes	No
WWF&MT	= Weeks worked by parents in past 12 months,1967 (1 = no parents in household or parents did not work; 2 = father or mother, 1-26 weeks; 3 = father or mother, 27-52 weeks; 4 = father and mother worked; 5 = NA)	Yes	Yes
RESCOM	= Residence in 1967 compared to 1966 (1 = same area; 2 = different area--less than 50 miles; 3 = different area--50-399 miles; 4 = different area--400 miles or more; 5 = different area--distance unknown; 6 = NA)	Yes	Yes
DELBEH	= Reported delinquent behavior: expelled or suspended; committed to correctional institution; probationed from correctional institution (1 = all three; 2 = any two; 3 = any one; 4 = none; 5 = NA)	Yes	No
IQ	= IQ or mental ability score (1 = stanines 1-3; 2 = stanine 4; 3 = stanine 5; 4 = stanine 6; 5 = stanine 7-9; 6 = NA)	Yes	Yes
TYPEHS	= Type of high school last attended, 1966 (1 = general HS; 2 = vocational HS; 3 = junior HS; 4 = other; 5 = NA)	Yes	Yes
ADAEXP	= Price-adjusted expenditures per pupil in ADA (1 = less than $250; 2 = $250-349; 3 = $350-449; 4 = $450-549; 5 = $550-649; 6 = $649 or more; 7 = NA)	Yes	Yes
PSUDEM	= Index of demand for labor of male youth[c] (1 = 00-19 percent; 2 = 20-99 percent; 3 = NA)	Yes	Yes

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(c) The sum of the percentage of the labor force in the 245 primary sampling units who were employed in agriculture and retail trade as of the 1960 Census.

		Used with Y_1	Used with Y_2
PSUVNP	= Unemployment rate in local area, 1967 (1 = under 3.0 percent; 2 = 3.0 percent-5.0 percent; 3 = over 5.0 percent; 4 = does not live in primary sampling unit; 5 = NA)	Yes	Yes
INDEX	= School quality index[d] (1 = 1-20; 2 = 21-40; 3 = 41-60; 4 = 61-80; 5 = 81-100; 6 = NA)	Yes	Yes
BSOHHT	= Number of brothers and sisters, 1966 (0=none; 1 = 1; 2 = 2-3; 3 = 4-5; 4 = 6 or more; 5 = NA)	No	Yes
FAM13E	= Number of family members with 13 or more years of education (1 = 0; 2 = 1; 3 = 2; 4 = 3 or more; 5 = NA)	No	Yes
PSUCØL	= Presence of college in primary sampling unit (1 = 2 year college only; 2 = 4 year or both; 3 = none; 4 = NA)	No	Yes
RACINC	= Race and family income[e] (0 = white NA; 1 = white less than $3,000; 2 = black less than $3,000; 3 = white $3,000-5,999; 4 = black $3,000-5,999; 5 = white 6,000-9,999; 6 = black $6,000-9,999; 7 = white $10,000 or more; 8 = black $10,000 or over; 9 = black NA)	Yes	No

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(d) See text, footnote 4, for a description of how this variable was constructed.

(e) This is a transgenerated variable combining RACE and INCF12.